higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY

(Second paper)

NQF LEVEL 2

(10401012)

17 February 2025 (Y-paper)
13:00–16:00

Drawing instruments and non-programmable calculators may be used.

This question paper consists of 9 pages and 2 answer sheets.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
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MATHEMATICAL LITERACY
NQF LEVEL 2
(Second paper)
TIME: 3 HOURS
MARKS: 150

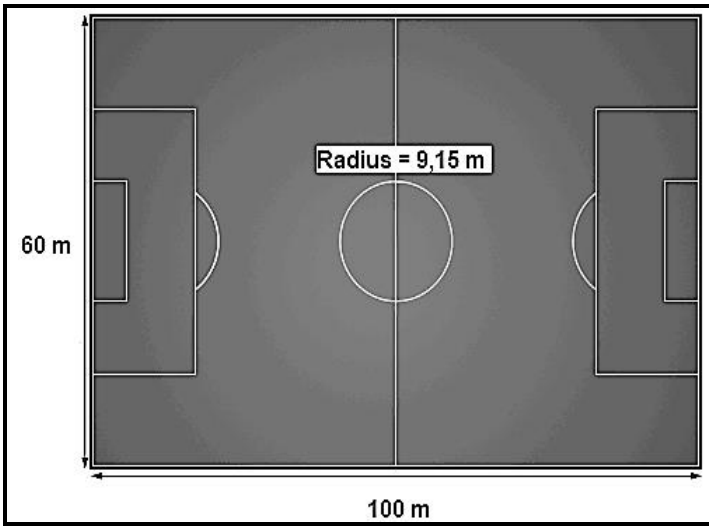
INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Answer QUESTION 2.2.1 on ANSWER SHEET A and QUESTION 3.1.3 on ANSWER SHEET B.
4. Number the answers according to the numbering system used in this question paper.
5. Clearly show all calculations, diagrams, graphs et cetera used in this paper.
6. Round off the answers to TWO decimals where necessary, unless otherwise stated.
7. Drawing instruments, including rulers, compasses and protractors may be used.
8. Diagrams are not necessarily drawn to scale.
9. Use only a black or blue pen.
10. Write neatly and legibly.

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QUESTION 1

1.1 The local soccer club wants to resurface the soccer field as shown in the diagram below. The length of the field is 100 m and the width is 60 m. The centre circle has a radius of 9,15 m. Study the diagram and answer the following questions:





Sods of grass

1.1.1 What is the two-dimensional shape of the soccer field? (1)

1.1.2 Calculate the perimeter of the soccer field.
Use the formula: Perimeter = (2 × length) + (2 × breadth) (3)

1.1.3 Calculate the area of the centre circle. The radius is 9,15 m. Use the formula: $A = \pi r^2$ where $\pi = 3{,}14$ (3)

1.1.4 Sods of grass can be bought from a company to resurface the field. The sods of grass come in rectangles that are rolled up.

Dimensions of a sod of grass:
Length = 4 m
Breadth = 1 m

Calculate how many sods of grass you will need to cover the soccer field.

Area = Length × Breadth (7)

1.1.5 There are two options available to resurface the soccer field. Assume that the area to be resurfaced is 6 000 m².

Study the two options and determine which option will be more cost-effective. Show all your calculations.

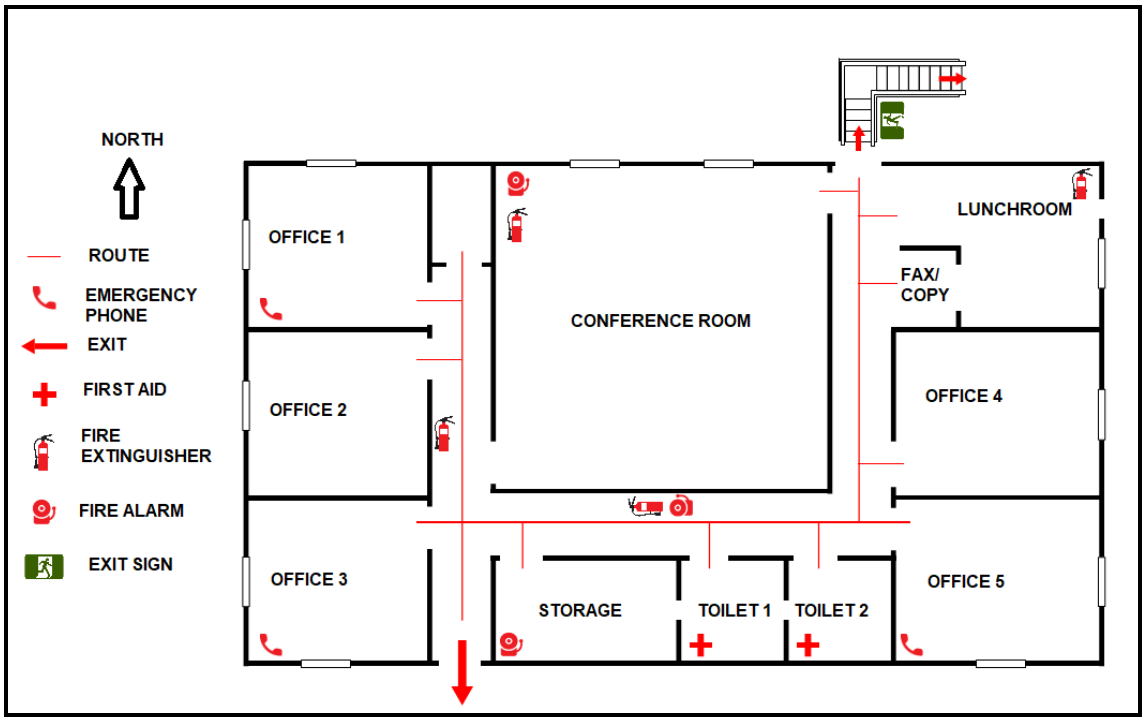
OPTION 1:	OPTION 2:
Buy grass from company @ R30/m² Company lays grass @ R10/m²	Buy grass from company @ R30/m² 10 workers will work for 10 days to lay the grass. It will cost R300 per worker per day.

(9)

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1.2 Below is a floorplan of the office building for the soccer club. The floorplan indicates important information in case of an emergency.

Study the floorplan and answer the following questions:



1.2.1 How many windows are on the floor plan? (1)

1.2.2 Draw the symbol for First Aid. (1)

1.2.3 In which direction is the Conference Room from Office 3? (1)

1.2.4 Name TWO emergency plans that one needs to know in the event of an emergency on the above floorplan? (4)

1.2.5 How many exits are on the floorplan? (1)

1.2.6 If a person is in Toilet 1 when the fire alarm goes off and the office building has to be evacuated, what is the shortest route to the nearest exit? Give a detailed description. (2)

1.2.7 Would a person in Office 3 be able to make an emergency call if needed? Give a reason for your answer. (3)

1.3 The scale of a map is 1:1 500. The distance between two points on the map is 98 mm.

Calculate the real distance (on the ground) between the two points. Give you answer in metres (m). (4)

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QUESTION 2

2.1 Study the information below and answer the following questions:

The soccer club decides to host a soccer festival to raise funds towards resurfacing the field. There are 16 teams of 18 players each who will participate. Each team has to have one coach and one manager. The teams will receive lunch and juice on the day of the festival. The cost for the teams: R200 per player R100 per coach/manager	

2.1.1 How much income will the club generate from the teams that have entered? (7)

2.1.2 The juice for the festival will be bought in bulk. Two quotes were obtained.

Enerjuice: R2 000 VAT inclusive
Powerflow: R1 800 VAT exclusive

Which quote will be the most cost effective? VAT is calculated at 15%. (4)

2.2 A budget must be compiled for the soccer festival. The following information is of importance:

A sponsorship of R25 000 was secured.
Food for teams: R16 000
Payment for referees: R3 500
Income from entries: R53 000 (only 14 teams confirmed their attendance)
Juice from Enerjuice: R2 000
Trophies for winning team: R1 800

2.2.1 Use the ANSWER SHEET A to compile the budget for the soccer festival. (9)

2.2.2 Give a reason as to why is it important to have a budget. (2)

2.2.3 Provide a suggestion to the soccer club as to how they could make more profit in the soccer festival. (2)

2.2.4 The sponsor wants to pay the sponsorship money into the club's bank account. The bank charges are as follows:

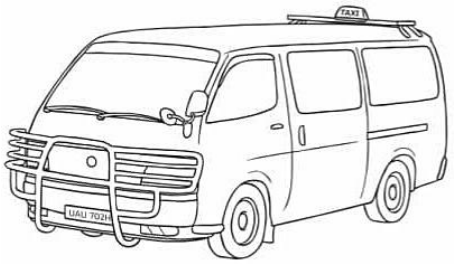
R40 + R1,75 per R1000

Calculate the amount of bank charges that the sponsor will pay. (3)

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2.3 One of the teams have to decide on a mode of transport to get to and from the soccer festival. The round trip for the festival is 75 km.
Note that the team consists out of 18 players, one coach and one manager.

The following options are available:

OPTION 1: ZOOM TAXIS Hire per taxi: R800 Rate per kilometre: R3,60 One taxi can transport 12 people. Cost (one taxi) = R800 + (R3,60 × kms)	
	OPTION 2: ZAMA EXPRESS Hire per bus: R1 400 Rate per kilometre: R1, 80 One bus can transport 22 people. Cost per bus = R1 400 + (R2,80 × kms)

2.3.1 Calculate which option would be most cost-effective for the trip. Show all your calculations. (6)

2.3.2 A member of the team suggested that they must use their private cars for the trip and that the owner of the car can be paid for petrol and the use of the car. Each car can transport 5 people.

It is estimated that each car will use 8 litres of petrol. The price for petrol is R25,49 per litre.

Each car owner will be paid R180 for the use of their car.

Would travelling by private transport be the most cost effective? Show all your calculations. (7)
[40]

QUESTION 3

3.1 The soccer club decides to host a dinner to raise funds. They will have no expenses to host the event, as they managed to secure sponsorship for the food. The dinner will be held at the club, so there is no cost to hire a venue. They intend to raise R40 000 with this event.

Study the table below and answer the following questions:

Number of tickets	10	**A**	30	40	50	60	70
Income in Rand	2 000	4 000	**B**	8 000	**C**	12 000	14 000

Income = R200 × number of tickets

3.1.1 What is the cost of one ticket? (2)

3.1.2 Calculate the value for A, B and C in the table (6)

3.1.3 Use the values on the table to draw a straight-line graph on ANSWER SHEET B. Supply a heading and labels for the graph. (6)

3.1.4 Calculate how many tickets must be sold to reach their goal of R40 000. (3)

3.1.5 How many tickets must they sell to double their goal of R40 000? (3)

3.1.6 Is the graph/table an example of a direct or indirect/inverse proportion? Give a reason for your answer. (3)

3.1.7 Name the dependent and independent variable in the table/graph. Make sure to distinguish clearly between the two variables. (2)

3.1.8 Is the relationship between the income from tickets and number of tickets sold decreasing, increasing or constant? Give a reason for your answer. (2)

3.2 Study the following sequence of numbers and answer the questions that follow:

4 000 ; 2 000 ; 1 000 ; _____ ; _____ ; _____ .

3.2.1 Complete the missing numbers in the pattern. (3)

3.2.2 Is the pattern in QUESTION 3.2 an example of an arithmetic (constant difference) or a geometric (constant ratio) pattern? Give a reason for your answer. (3)

3.2.3 Calculate the constant/common ratio or constant/common difference of the pattern. (2)

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QUESTION 4

4.1 The soccer club charges an entry fee of R20 per person for matches. Below are the numbers of people who came to attend matches in the first three months of the season. Study the table below and answer the following questions:



	MAY	JUNE	JULY
Match 1	1 023	1 432	1 128
Match 2	1 246	1 221	1 277
Match 3	967	843	742
Match 4	674	534	559

4.1.1 Which month and match had the highest attendance? (2)

4.1.2 Do you think the information in the table is based on FACT or OPINION? Give a reason for your answer. (3)

4.1.3 Would the information on the table be collected with an INTERVIEW or an OBSERVATION? Give a reason for your answer. (3)

4.1.4 Did May or June have the highest average attendance? Show all your calculations. (7)

4.1.5 There seems to be a downward trend in attendance for the last match in each month.

Suggest ONE possible reason for this trend. (2)

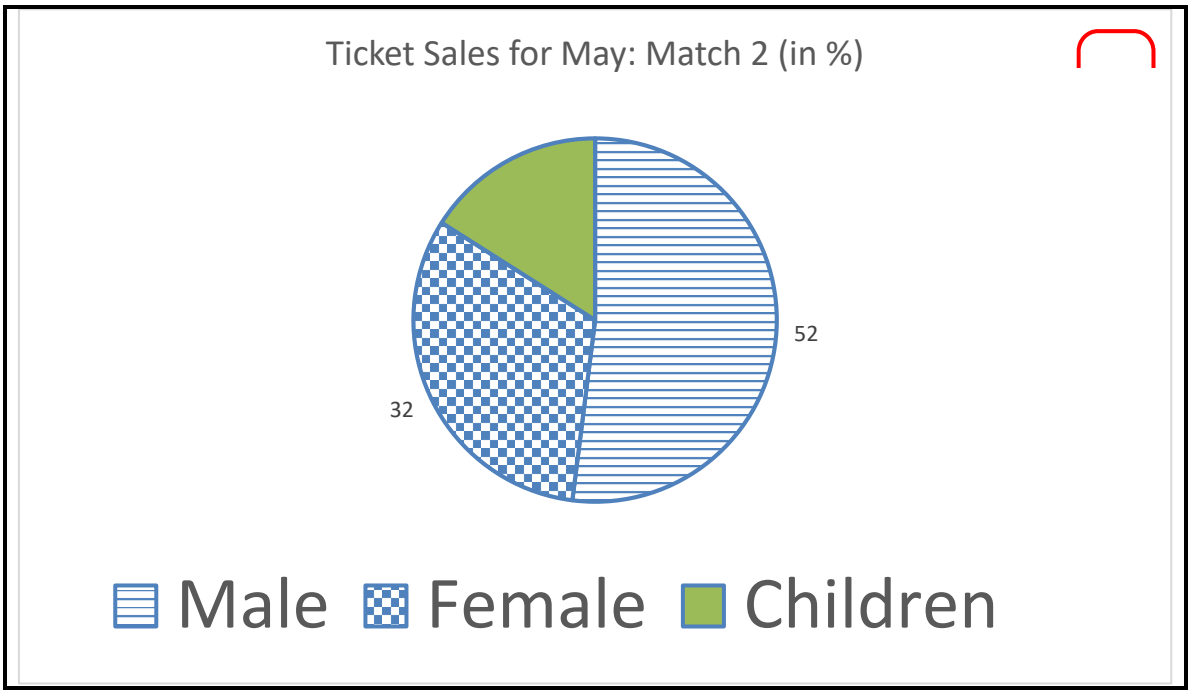
4.1.6 Calculate the range of the attendance during July. (3)

4.1.7 Calculate the median of the attendance during June. (3)

4.1.8 How can the club try to increase ticket sales? Give ONE suggestion. (2)

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4.2



4.2.1 Who had the highest attendance? (1)

4.2.2 Calculate the percentage attendance of the children. (3)

4.2.3 How many males attended the match? Round your answer to the nearest whole number. Use the information in QUESTION 4.1 to answer this question. (4)

4.2.4 Do you think a pie chart is the correct type of graph to display this information? Give a reason for your answer. (2)

[35]

TOTAL: 150

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ANSWER SHEET A **EXAMINATION NUMBER:** | | | | | | | | | | | | | |

QUESTION 2

2.2.1

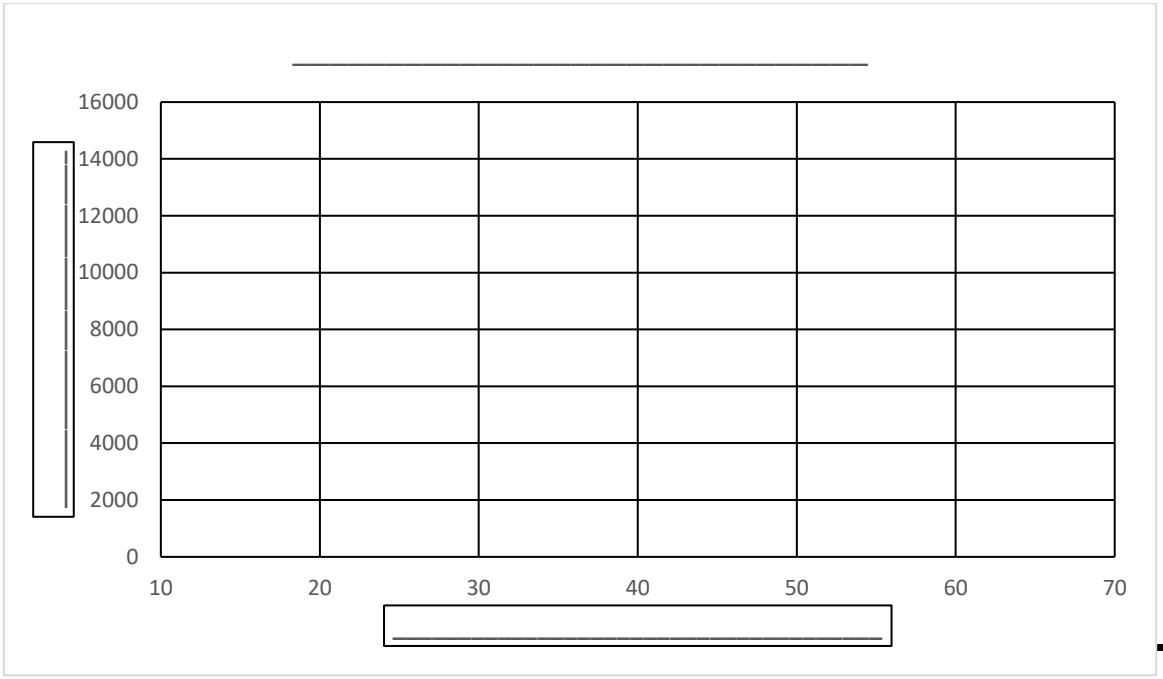
BUDGET FOR SOCCER FESTIVAL				
INCOME			EXPENSES	
ITEM	AMOUNT		ITEM	AMOUNT
TOTAL INCOME:			TOTAL EXPENSE:	
PROFIT/LOSS = INCOME – EXPENSES:				

9

ANSWER SHEET B **EXAMINATION NUMBER:**

QUESTION 3

3.1.3



6

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